

United States  
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Forest Service

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# **STANDARD ROAD MAINTENANCE SPECIFICATIONS**

## **Rocky Mountain Region**

**SPECIFICATIONS 800 - 860**

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# GENERAL INSTRUCTIONS

These Standard Road Maintenance Specifications are written to provide uniformity throughout the Region in specifying road maintenance. These specifications are applicable in specifying road maintenance requirements in non-personal service contracts and other non-contracting areas such as special uses, road use permits (as attachments there-to), and Forest Road Agreements with Counties and other Agencies.

When using these specifications where payment is not required, it will be necessary to delete the Payment section.

Figure 1 - Illustration of Road Terms, is the only Standard Drawing that is provided. Additional drawings shall be included at the Forest level as necessary.

When using these specifications in non-personal service contracts, you should refer to the "Solicitation Format For Contracting Road Maintenance by Non-personal Service Contract".

## **800 - DEFINITIONS**

Base Course - The layer or layers of specified or selected material of designed thickness placed on a sub base or subgrade to support a surface course.

Berm - Curb or dike constructed to control roadway runoff water.

Borrow - Select material taken from designated Sites to build up the roadway or other structures.

Bridge - A structure, including supports, erected over a depression or an obstruction, such as water, road, trail, or railways, and having a deck for carrying traffic or other moving loads.

Catch basin - A flat bottom ditch constructed at the culvert entrance to improve the entrance conditions and to provide space for debris collection and removal.

Channel - A waterway leading into or away from a culvert or bridge.

Crown - The slope of the roadbed measured from the centerline to provide for drainage.

Culvert - A conduit or passageway under a road, trail, or other obstruction. A culvert differs from a bridge in that it is usually constructed entirely below the elevation of the traveled way.

Cushion Material - Native or imported material generally placed over rocky sections of un-surfaced roads to provide a usable and maintainable traveled way.

Ditch - A relatively long narrow excavation placed to collect or disperse water.

Drainage ditch - A ditch constructed between the traveled way and the adjacent terrain for the purpose of transporting water that leaves the road surface or cut slope.

Leadoff ditch - A ditch used to remove water from drainage ditches.

Outlet ditch - A ditch used to provide drainage from culverts, cattleguards, drainage dips, or other structures.

Intercept ditch - Any ditch that normally parallels the road centerline and diverts water from natural flow patterns to protect road slopes, roadbed, or downslope areas. Intercept ditches may be located within the roadway or roadside, but as used in this definition excludes drainage ditches.

Drainage dip - A drainage structure constructed within the roadbed surface to form uniform depressions, which allows routine passage of vehicles while diverting water from the traveled way.

Drawings - Depictions detailing maintenance contemplated including all road-listing diagrams, maps, and performance schedules included in the contract.

Drop Inlet - A vertical conduit used as an entrance to a culvert.

Equipment - All machinery operating supplies, and tools necessary for the proper performance and acceptable completion of the work.

Excess Material - Material from the roadway excess to that needed for maintenance of roadway.

Grade - The trace of an imaginary vertical plane, intersecting the top surface of the road at centerline or ditch line.

Invert - The bottom of the inside of a conduit or culvert.

Materials - Any substances specified for use in the performance of the work.

Measurement - Method of determining and expressing the quantities of work.

Out slope-in slope - The slope of the roadbed from the cut slope to provide for drainage. Applies to roads without roadside ditches or crown.

Pavement Structure - Sub base, base, or surface course, or combination thereof, placed on a subgrade to support the traffic load and distribute it to the roadbed.

Right-of-Way - A general term denoting land, property, or interest acquired for or devoted to a road.

Roadbed - The portion of a road between the intersection of the subgrade and side slopes, excluding that portion of the ditch below the subgrade.

Roadside - A general term denoting the area adjoining the outer edge of the roadway.

Roadway - The portion of the road within the limits of excavation and embankment.

Shoulder - The portion of the roadway contiguous with the traveled way for accommodation of stopped vehicles, for emergency use, and for lateral support of pavement structure.

Slide - A Concentrated deposit of materials from above or on the back slope extending onto the traveled way or shoulders that has been deposited by mass land movements.

Slough - Materials eroded or raveled from the back slope which partially or completely block the ditch, but do not encroach on the traveled way so as to block vehicular passage.

Slump - A localized portion of the roadbed that has slipped downward or otherwise become lower than that of the adjacent roadbed and constitutes a hazard to traffic.

Subgrade - Top surface of roadbed upon which sub base, base, or surface course is constructed. For roads without base course or surface course, that portion of roadbed prepared as the finished wearing surface.

Surface Course - The top layer of a pavement structure, sometimes called the wearing course, usually designed to resist skidding, traffic abrasion, and the disintegrating effects of climate.

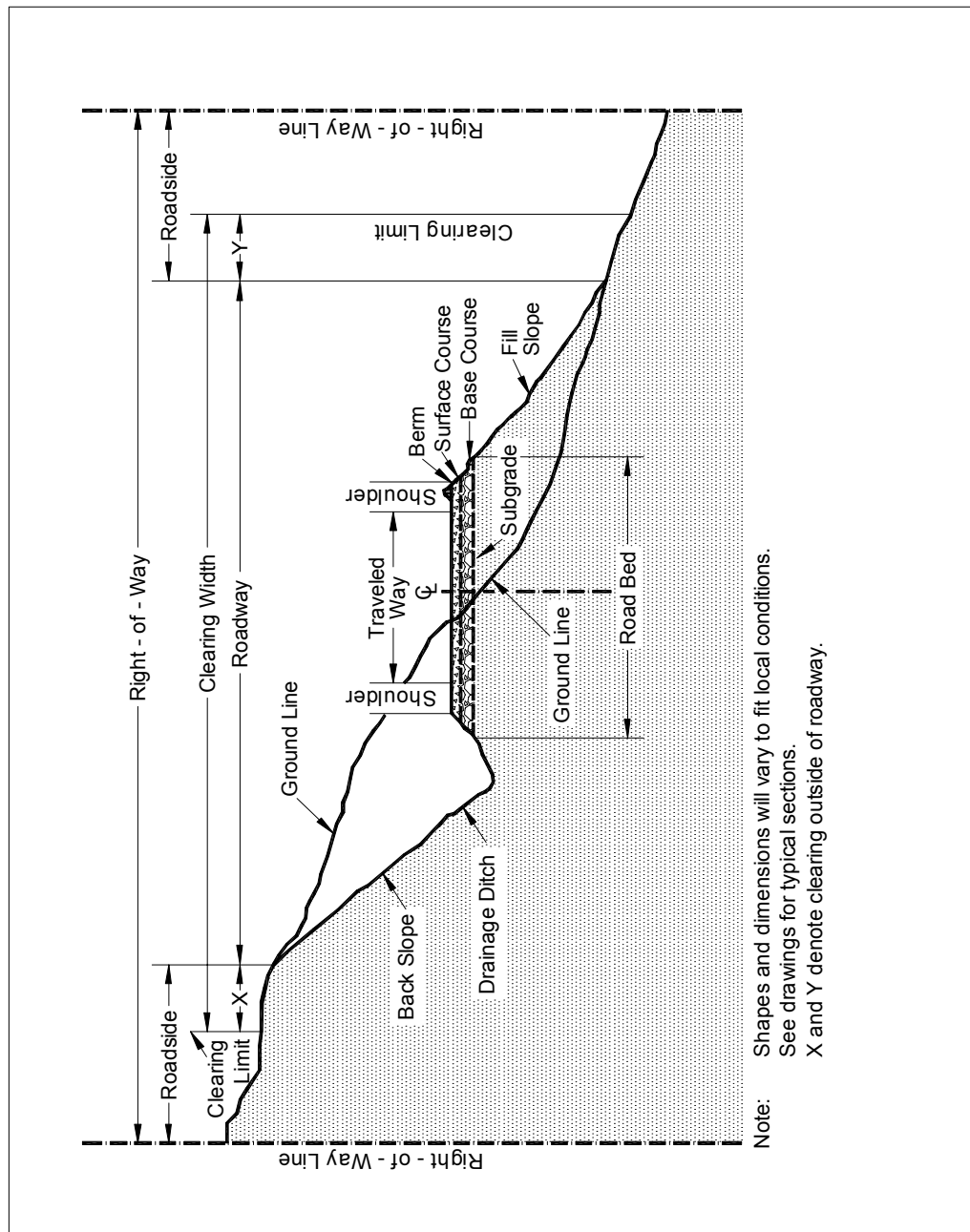
Traveled Way - The portion of the roadway for the movement of vehicles, exclusive of shoulders on asphalt paved roads. For purpose of this contract traveled way includes turnouts and curve widening.

Turnouts - A short auxiliary lane provided for passage of meeting vehicles.

Unsuitable material - Material that is not suitable to be incorporated into the work.

Waterbar - A drainage structure constructed across the roadbed surface to divert water from the road surface. Vehicular passage is not a consideration.





**Figure 1. Illustration of road structure terms.**

## **801 - SLIDE AND SLUMP REPAIR**

### **DESCRIPTION**

**801.01** Slide removal is the removal from the roadway and the disposal of all material, such as soil, rock, and vegetation that cannot be routinely handled by a motor grader during ditch cleaning and surface blading.

Slump repair is the filling of depressions or washouts in the roadway, which cannot be routinely filled by a motor grader during surface blading.

Slide removal and slump repair includes excavating, loading, hauling, placing, and compacting of all material. This includes the development of disposal or borrows areas.

### **WORK REQUIREMENTS**

**801.02** Slide material, including soil, rock, and vegetative matter which encroaches onto the roadway shall be removed. The slope, which generated the slide material, shall be reshaped during the removal of the slide material with the excavation and loading equipment. Slide material deposited on the fill slope and below the roadbed shall not be removed unless needed for slope stability or to protect adjacent resources.

Surface and base courses shall not be excavated during slide removal operations.

Slide material, including soil, rock, and vegetative matter shall be disposed of adjacent to the site unless otherwise SHOWN ON THE DRAWINGS. Sidecasting into streams, lakes or watercourses will not be permitted.

When filling depressions due to slumps or washouts, materials shall be obtained from locations or borrow sites adjacent to the site unless otherwise SHOWN ON THE DRAWINGS.

Existing aggregate surfacing shall be salvaged when practical and re-laid after depressions have been filled.

The repaired areas shall blend with the adjacent undisturbed traveled way.

### **MEASUREMENT**

**801.03** Slide removal will be measured by the cubic yard determined by truck measure, for materials acceptably removed.

Materials use for slump repair will be measured by the cubic yard, determined by truck measure, for materials acceptably placed.

Vehicles shall be loaded to at least their water level capacity.

## **PAYMENT**

**801.04** The accepted quantities will be paid for at the contract unit price for each pay item shown in the SCHEDULE OF ITEMS.

Payment will be made under:

<b><u>Pay Item</u></b>	<b><u>Pay Unit</u></b>
801(01) Slide Removal .....	C.Y.
801(02) Slump Repair.....	C.Y.

## 802 - DITCH CLEANING

### DESCRIPTION

**802.01** Ditch cleaning is the removal and disposal of all slough material and debris from drainage ditches, outlet ditches, and leadoff ditches to provide an unobstructed and free-draining waterway.

### WORK REQUIREMENTS

**802.02** All slough material or other debris, which might obstruct water flow in the roadside ditch, shall be removed. Slough material removed from the ditch, if suitable, may be blended into existing native road surface or shoulders or placed in designated berms during surface blading.

Material from ditch cleaning operations shall not be blended into, bladed across aggregate surface roads, or bladed onto or across bituminous surface roads.

Excess material that cannot be blended into existing native road surfaces, shoulders, or berms shall be removed from the ditch and disposed of by sidecasting, unless otherwise SHOWN ON THE DRAWINGS. Sidecasting into stream's, lakes, or watercourses will not be permitted.

Roadway backslopes and berms shall not be under cut.

Limbs and wood chunks in excess of one (1) foot in length or three (3) inches in diameter shall be removed from ditches and placed outside the roadway.

### MEASUREMENT

**802.03** Ditch cleaning will be measured to the nearest one-tenth (0.1) mile of cumulative ditch line cleaned on each road.

### PAYMENT

**802.04** The accepted quantities will be paid for at the contract unit price for each pay item shown in the SCHEDULE OF ITEMS.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
802 (01) Ditch Cleaning .....	Mile

## **803 - SURFACE BLADING**

### **DESCRIPTION**

**803.01** Surface blading is the maintaining of the roadbed and ditches of a native surface or aggregate surfaced road to facilitate traffic and provide proper drainage. It includes maintaining the crown, in slope or out slope of the traveled way, shoulders, drainage dips, drainage ditches, lead-off ditches, berms, turnouts, approach road intersections, and cleaning of bridge decks.

### **WORK REQUIREMENTS**

**803.02** The roadbed shall be crowned or sloped to conform to the original prism. All berms shall be removed from the shoulders to the maximum extent possible and incorporated into the traveled way surface except those that are specifically designated to remain.

On roads open to public traffic, berms of materials caused by road maintenance operations shall be removed from the traveled way prior to the end of each day's work.

The blading shall proceed in an orderly fashion by successive passes with graders parallel to the road centerline, progressing from the lower side to the upper side of the roadbed and back across. In the process, shoulder material shall be cut and replaced to prevent vegetation encroachment.

On native surface roads, all ruts, holes, and washes shall be removed by scarifying or cutting to the bottom of such defects. Fines accumulated in blading roads or from drainage ditches shall not be wasted over fill shoulders.

On aggregate surface roads, all ruts, holes, and washes shall be removed by scarifying or cutting to the bottom of the aggregate surface. Scarification of subgrade material will not be permitted unless SHOWN ON THE DRAWINGS.

Rocks or other material remaining on the traveled way after the final blading that fail to pass a 4-inch sieve or are larger than the maximum size of imported surfacing shall be disposed of by sidecasting unless otherwise SHOWN ON THE DRAWINGS. Sidecasting into streams, lakes or watercourses will not be permitted.

The cleaning of all drainage ditches, and lead-off ditches shall be Included with the blading procedures provided the work can be accomplished with a motor grader. Ditches shall be cleaned of any material, which would obstruct the flow of water. The backslope shall not be undercut. Drainage dips shall be maintained to a depth and width to provide drainage. The lower end of drainage dips, including lead-off ditches, shall be shaped to drain water away from the roadway.

The roadbed immediately before and after cattleguards and bridges shall be bladed in such a manner as to effect a smooth transition. Material shall not be deposited inside

cattleguards or onto bridges. Any material deposited on bridge decks, including any accumulated material shall be removed from bridge decks. Deck drains shall be opened.

Rolling dips and leadoff ditches shall be cleaned and maintained to a depth and width to provide drainage. The lower end of the rolling dip, including leadoff ditches, shall be shaped to drain water away from the roadway.

Widened roadbed sections at cattleguards, curves, fills, and turnouts shall also be included with the blading of the road surface.

Intersecting roads shall be bladed for a distance of 50 feet to assure proper transition of the two riding surfaces.

### **MEASUREMENT**

**803.03** Surface blading will be measured to the nearest one-tenth (0.1) mile as measured by a calibrated vehicle odometer along the road centerline.

### **PAYMENT**

**803.04** The accepted quantities will be paid for at the contract unit price for each pay item shown in the SCHEDULE OF ITEMS.

Payment will be made under:

<b><u>Pay Item</u></b>	<b><u>Pay Unit</u></b>
803 (01) Blading Surfaced Roads.....	Mile
803 (02) Blading Native Surfaced Roads .....	Mile

## **804 - SURFACE REPAIR**

### **DESCRIPTION**

**804.01** Surface repair is the repair of small soft, deformed, or displaced areas in the roadbed. The work includes area preparation and furnishing, hauling, and placing all necessary materials including subgrade, base, or surfacing material necessary to repair the surface and to blend the repair with the adjacent road cross section.

### **MATERIAL**

**804.02** Material for the repair of native surface roads shall be from area adjacent to the site or from borrowed sources SHOWN ON THE DRAWINGS and designated on the ground.

Material for the repair of aggregate surfaced roads shall be acquired from designated Forest Service sources or from approved commercial sources and shall conform to the gradation requirements and quantities SHOWN ON THE DRAWINGS.

### **WORK REQUIREMENTS**

**804.03** For native surfaced roads, the effected area shall be smoothed using the material within the area to generally conform to the surface of the traveled way. High spots shall be removed to fill holes, ruts, washes or other low areas. The traveled way shall be restored to the approximate elevation of the original grade by placing successive layers of borrow in lifts not to exceed 12 inches. Placing and hauling equipment shall be operated over the full width of each layer. The final layer shall be bladed to generally conform to the grade, width, and slope of the adjacent road surface.

Original ditches and other drainage patterns within the roadway shall be re-established.

For aggregate surfaced roads, the aggregate surfacing shall be removed, if practical, and stored for re-use over repaired section of subgrade. The subgrade shall then be treated as in the previous paragraph, establishing the subgrade cross section. The surface aggregate shall then be placed in layers not to exceed 4 inches, shaped and compacted by operating the placing and hauling equipment over the full width of each layer. The final layer shall be bladed to shape the traveled way to generally conform to the grade, width, and slope of the adjacent traveled way. Surfacing material shall not be placed or spilled into adjacent ditches or drainages.

### **MEASUREMENT**

**804.04** Surface repair for native surface roads will be measured by the Cubic Yard as determined by the average end area of the segments to be repaired. Surface repair for aggregate surfaced roads will be determined by truck measure for materials acceptably placed. Vehicles shall be loaded to at least their water level capacity.

## PAYMENT

**804.05** The accepted quantities will be paid for at the contract unit price for each pay item shown in the SCHEDULE OF ITEMS.

Payment will be made under:

<b><u>Pay Item</u></b>	<b><u>Pay Unit</u></b>
804(01) Surface Repair for Native Surface Roads .....	C.Y.
804(02) Surface Repair for Aggregate Surfaced Roads .....	C.Y.



## **805 - DRAINAGE STRUCTURES**

### **DESCRIPTION**

**805.01** This work shall consist of cleaning culverts, drainage dips, and related items such as catch basins, outlet ditches, leadoff ditches, trash racks, drop inlets, headwalls, aprons, and existing riprap.

### **WORK REQUIREMENTS**

**805.02** Drainage structures and related items shall be cleared of all foreign material and all vegetative growth which interferes with the flow pattern. Grass shall be left in place provided drainage is not obstructed.

Culverts which have silted in to a depth of 1/4 of their opening height or more shall have their inlet and outlets cleaned as well as (3) feet of the upper and lower ends of the inside cleaned out to expose the full diameter of the culvert.

Unless otherwise SHOWN ON THE DRAWINGS catch basins shall be cleared of material to the bottom of the Invert of the culvert and at least (18) inches horizontally towards the backslope or the width of the basin, whichever is the greater.

The backslope shall be cleaned of loose material for a distance of (2) pipe diameters as measured from the bottom of the ditch up the backslope and for a width of (2) pipe diameters as measured horizontally on the backslope. Undercutting the backslope will not be permitted.

Inlet channel transition from the drainage ditch to the catch basin and outlet ditches shall be cleaned a distance of ten (10) feet. Material removed, if suitable, may be blended into existing native road surfaces or shoulders. On aggregate surface roads, care must be taken to assure the material is not mixed into the existing aggregate. Unsuitable material shall be disposed of by sidecasting unless otherwise SHOWN ON THE DRAWINGS. Sidecasting into streams, lakes or watercourses will not be permitted.

Ditches shall be cleaned to conform to previous line, grade, and cross section. Cleaning is not required on ditches that provide drainage and are free of debris larger than (3) inches in diameter and (1) foot in length.

**805.03** Drainage dip maintenance consists of cleaning existing dips on native surface and aggregate surfaced roads.

Drainage dips shall be shaped to a depth and width to provide drainage and in reasonably conformity to the original lines, grades, and cross sections unless otherwise SHOWN ON THE DRAWINGS or designated on the ground. Handwork may be necessary to obtain a smooth surface and uniform cross section. Leadoff ditches shall be cleaned for a distance of ten (10) feet from the drainage dip.

## MEASUREMENT

**805.04** Culvert cleaning measurement will be the number of units of each culvert type. Cleaning of catch basins, outlet ditches, headwalls, riprap, and drop inlets shall be incidental to this Item.

Drainage dip cleaning measurement will be the number of dips completed and accepted. Leadoff ditch cleaning shall be Incidental to this item.

Ditch cleaning greater than 10 feet from the drainage structure will be measured and paid in accordance with Section 802 Ditch Cleaning.

## PAYMENT

**805.05** The accepted quantities will be paid for at the contract unit price for each pay item shown in the SCHEDULE OF ITEMS.

Payment will be made under:

<b><u>Pay Item</u></b>	<b><u>Pay Unit</u></b>
805(01) Culvert cleaning 24" Dia. and under.....	EA.
805(02) Culvert cleaning 24" through 48" Dia. ....	EA.
805(03) Culvert cleaning over 48" Dia. ....	EA.
805(04) Drainage Dip cleaning .....	EA.

## 806 - DUST ABATEMENT AND ROAD STABILIZATION

### DESCRIPTION

**806.01** This work shall consist of furnishing and applying material to the road surface to abate dust or stabilize the surface.

### MATERIALS

**806.02** Dust abatement and stabilization materials shall meet the requirements of the attached *Special Project Specifications*.

Watering shall meet the requirements of *Section 809 Developing Water Supply and Watering*.

### WORK REQUIREMENTS

**806.03** The application of dust abatement materials, stabilization materials, and watering shall be in accordance with the attached *Special Project Specifications* and *Section 809 Developing Water Supply and Watering*.

### MEASUREMENT

**806.04** Dust Abatement and Road Stabilization will be measured as designated in the SCHEDULE OF ITEMS and in accordance with the following:

**Ton.** Short ton consisting of 2000 pounds as determined by net certified scale weights or weights based on certified volumes.

**Gallons.** As determined by net certified scale weights based on certified volumes.

### PAYMENT

**806.05** The accepted quantities will be paid for at the contract unit price for each pay item shown in the SCHEDULE OF ITEMS.

Payment will be made under:

<b><u>Pay Item</u></b>	<b><u>Pay Unit</u></b>
806(01) Type _____	.....Ton
806(02) Type _____	.....Gal

## **807 - CUTTING ROADSIDE AND ROADWAY VEGETATION**

### **DESCRIPTION**

**807.01** This work consists of cutting vegetative growth including trees less than four (4) inches in diameter on roadsides and roadway surfaces unless otherwise SHOWN ON THE DRAWINGS.

### **WORK REQUIREMENTS**

**807.02** Brush, trees, and limbs shall be removed within the designated area as SHOWN ON THE DRAWINGS or designated on the ground.

Unless otherwise SHOWN ON THE DRAWINGS brush and trees less than four (4) inches in diameter within the designated area adjacent to the traveled way shall be cut to a maximum height of six (6) inches above the ground surface or obstructions such as rocks or stumps. Trees within the designated area in excess of four (4) inches in diameter when measured six (6) inches above the ground shall be limbed so that no limb extends into the designated area or over the roadbed. Tree limbs shall be trimmed as near flush with the trunk as practicable.

Brush and trees designated for removal within the designated traveled way shall be cut parallel and as close to the ground as practicable or to a maximum of one (1) inch above the elevation of the road surface. Vegetation shall be cut over the entire width of the traveled way or to the maximum width SHOWN ON THE DRAWINGS, whichever is less.

Signs, markers, and other road appurtenances are designated to be retained.

Work may be performed by hand or mechanically. Self-propelled equipment shall not be allowed on cut and fill slopes or in ditches unless otherwise SHOWN ON THE DRAWINGS.

Any damage to trunks of standing trees caused by Contractor's operation shall be treated with a commercial nursery sealer.

Limbs, chunks, and debris in excess of one (1) foot in length or three (3) inches in diameter shall be scattered outside the roadway. Concentrations of slash and debris greater than eighteen (18) inches above the ground will not be permitted.

Slash and debris shall not be placed in live streams.

## MEASUREMENT

**807.03** Cutting roadside and roadway vegetation will be measured by linear measurement, horizontally along the road centerline as measured to the nearest one-tenth (0.1) mile or to the nearest 100 foot station, by the number of acres and fractions thereof within the designated area regardless of the amount of work required, or as lump sum for the complete unit of work.

## PAYMENT

**807.04** The accepted quantities will be paid for at the contract unit price for each pay item shown in the SCHEDULE OF ITEMS.

Payment will be made under:

<b><u>Pay Items</u></b>	<b><u>Pay Units</u></b>
807(01) Cutting Roadside and Roadway Vegetation .....	Mile
807(02) Cutting Roadside and Roadway Vegetation .....	Lump Sum
807(03) Cutting Roadside and Roadway Vegetation .....	Acre
807(04) Cutting Roadside and Roadway Vegetation .....	Station

## **808 - MISCELLANEOUS STRUCTURES**

### **DESCRIPTION**

**808.01** This consists of maintaining miscellaneous Structures such as cattleguards, gates, and other similar structures that have been previously installed to insure the safe and efficient operation of the road and structures.

### **MATERIALS**

**808.02** Any materials used in the maintenance of these structures shall be similar in type and quality to the existing material in the structure being maintained.

### **WORK REQUIREMENTS**

**808.03** Loose rails shall be welded or bolted back in place. Ruptured welds and localized cracks shall be re-welded. The area beneath the cattleguard deck shall be cleaned of dirt and debris to a depth of two (2) feet below the tops of the grids or to the bottom of the foundation whichever is less. Where there are existing ditches, cleaning shall include removing material from the ditch to provide for drainage through the installation. Materials removed shall be disposed of adjacent to the site outside the roadway and away from natural or man-made drainages unless otherwise SHOWN ON THE DRAWINGS.

If the cattleguard deck is required to be removed to facilitate repair and cleaning and there is no bypass, delay for traffic shall not exceed two (2) hours contingent on at least two (2) week days advance notice to the Government of the planned work.

Roadbed and surfacing materials disturbed by Contractor's operations shall be conserved separately, replaced, and compacted to conform to the adjacent roadbed material.

**808.04** Gates shall be kept in good repair and maintained to swing easily. Hinges or latches shall be repaired if not operating properly. Hinges shall be oiled. Brush and debris shall be removed from within the swinging radius. On wire gates, wires shall be tightened to eliminate wire sag between posts. Wire gates shall be maintained to open and close easily.

The Government may furnish replacement material for damaged or defective cattleguard and gate components. Government furnished materials and locations are SHOWN ON THE DRAWINGS.

## MEASUREMENT

**808.05** Measurement will be the number of units for each item listed in the SCHEDULE OF ITEMS completed and accepted.

## PAYMENT

**808.06** The accepted quantities will be paid for at the contract unit price for each pay item shown in the SCHEDULE OF ITEMS.

Payment will be made under:

<b><u>Pay Item</u></b>	<b><u>Pay Unit</u></b>
808(01) Maintaining cattleguards.....	Each
808(02) Maintaining Gates .....	Each

## **809 - DEVELOPING WATER SUPPLY AND WATERING**

### **DESCRIPTION**

**809.01** This work shall consist of furnishing, hauling, and applying water.

### **MATERIALS**

**809.02** Water sources are SHOWN ON THE DRAWING. If, the contractor elects to obtain water from other sources, the contractor shall be responsible for obtaining the right to use the water.

### **WORK REQUIREMENTS**

**809.03** Developing water supplies and access shall be as SHOWN ON THE DRAWINGS.

Mobile watering equipment shall have watertight tanks of known capacity. Equipment used for dust control and finishing operations of subgrade and surfaces shall provide uniform and controlled application of water without ponding or washing. Positive control of water from the driver's position is required at all times.

Calibrated tanks, distributors, or accurate water meters shall be required if SHOWN ON THE DRAWINGS.

### **MEASUREMENT**

**809.04** The method of measurement will be measured as designated in the SCHEDULE OF ITEMS and in accordance with the following:

Lump sum. Denotes one complete unit of work completed and accepted, including necessary materials, equipment, and labor to complete the job.

Thousand Gallons (M. Gal.) When the SCHEDULE OF ITEMS calls for ***"Developing Water Supply and Water,"*** the cost of developing the supply shall be included in the unit price for the quantity of water delivered.

### **PAYMENT**

**809.05** The accepted quantities will be paid for at the contract unit price for each pay item shown in the SCHEDULE OF ITEMS.



Payment will be made under:

<b><u>Pay Item</u></b>	<b><u>Pay Unit</u></b>
809(01) Water .....	L. S.
809(02) Water .....	M. Gals.
809(03) Developing Water Supply and Watering .....	L.S.
809(04) Developing Water Supply and Watering .....	M. Gals.

## **810 - SURFACE REPLACEMENT**

### **DESCRIPTION**

**810.01** This work shall consist of replacing surface aggregate in areas SHOWN ON THE DRAWINGS or designated on the ground. Work Includes preparing the area, furnishing, hauling, placing and compacting all material necessary to blend with the adjacent roadway.

### **MATERIALS**

**810.02** Aggregate shall be obtained from approved Forest Service sources and shall conform to the gradation and quantity requirements as SHOWN ON THE DRAWINGS.

### **WORK REQUIREMENTS**

**810.03** Areas to receive aggregate, including turnouts shall be bladed and shaped to produce a surface which is uniform, consistent to grade, and crowned or sloped to conform to previous lines grade, and cross section. Blading shall be In accordance with *Section 803 Surface Blading*.

Aggregate shall be thoroughly mixed and spread on the prepared surface in layers not to exceed (4) inches in depth. When more than one layer is required, each layer shall be shaped and compacted before the succeeding layer is placed.

Watering shall be required if SHOWN ON THE DRAWINGS. If required, watering will be in accordance with *Section 809 Developing Water Supply and Watering*.

Aggregate shall be compacted by one of the following methods as SHOWN ON THE DRAWINGS.

**Compaction A.** Aggregate shall be compacted by operating spreading and hauling equipment over the full width of each layer of the aggregate.

**Compaction B.** Aggregate shall be moistened or dried to uniform moisture content suitable for compaction. Rollers meeting the requirements of the Special Project Specifications shall be operated over the full width of each layer until visual displacement ceases, but not fewer than three complete passes.

**Compaction C.** Each layer of aggregate shall be compacted to a density of at least 95 percent of the maximum density as determined by AASHTO T 99, Method C or D.

**Compaction D.** Each layer of aggregate shall be compacted to a density of at least 95 percent of the maximum density, as determined by AASHTO T 180, Method C or D.

The surface of each layer shall be bladed during the compaction operations to remove irregularities and produce a smooth, even surface.

## MEASUREMENT

**810.04** Surface replacement will be measured, for materials acceptably placed, In cubic yards as determined by truck measure, in cubic yards as determined by average end area of the material compacted and In place, or in tons (2000 pounds) as determined by net certified scale weights.

## PAYMENT

**810.05** The accepted quantities will be paid for at the contract unit price for each pay item shown in the SCHEDULE OF ITEMS.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
810(01) Surface Replacement, Compaction .....	CY.
Truck Measure Method of Measurement	
810(02) Surface Replacement, Compaction .....	CY.
Average End Area Method of Measurement	
810(03) Surface Replacement, Compaction .....	Ton

## **820 - NATIVE SURFACE ROAD MAINTENANCE**

### **DESCRIPTION**

**820.01** The maintenance work to be performed shall include work necessary to keep drainage functional, correction of safety problems, and maintenance of the road prism to provide passage of high clearance vehicles.

### **WORK REQUIREMENTS**

**820.02** This work shall consist of cleaning culverts, drainage dips, and related items such as catch basins, drainage dips, outlet ditches, leadoff ditches, trash racks, drop inlets, head walls, aprons, and existing riprap.

Drainage structures and related items shall be cleared of all foreign material and all vegetative growth, which interferes with the flow pattern. Grass shall be left in place provided drainage is not obstructed.

Culverts which have silted in to a depth of 1/4 of their opening height or more shall have their inlet and outlets cleaned as well as (3) feet of the upper and lower ends of the inside cleaned out to expose the full diameter of the culvert.

Unless otherwise SHOWN ON THE DRAWINGS, catch basins shall be cleared of material to the bottom of the invert of the culvert and at least (18) inches horizontally towards the backslope or the width of the basin, whichever is greater.

The backslope shall be cleaned of loose material for a distance of (2) pipe diameters as measured from the bottom of the ditch up the backslope and for a width of (2) pipe diameters as measured horizontally on the backslope.

Inlet channel transition from the ditch line to the catch basin shall be cleaned a distance of 10 feet. Material removed, if suitable may be blended into existing native road surfaces or shoulders. On aggregate surfaced roads, care must be taken to assure the material is not mixed into the existing aggregate. Unsuitable material shall be disposed of by sidecasting unless otherwise SHOWN ON THE DRAWINGS. Sidecasting into streams, lakes, or watercourses will not be permitted.

Ditches shall be cleaned to conform to previous line, grade, and cross section. Cleaning is not required on ditches that provide drainage and are free of debris larger than (3) inches in diameter and (1) foot in length.

Drainage dip maintenance consists of cleaning existing dips on native surface roads.

Drainage dips shall be shaped to a depth and width to provide drainage and in reasonable conformity to the original lines, grades, and cross sections unless otherwise SHOWN ON THE DRAWINGS or designated on the ground. Handwork may be necessary to obtain a smooth surface and uniform cross section. Leadoff ditches shall be cleaned for a distance

of ten (10) feet from the drainage dip. Material removed, if suitable, may be blended into existing native road surfaces or shoulders.

**820.03** Unless otherwise SHOWN ON THE DRAWINGS, logs and down trees, stumps, and loose rocks which extend more than (4) Inches above the road surface shall be removed or repositioned to provide adequate clearance for vehicular travel. Logs and down trees should be cut to provide not less than 10 feet of opening for vehicular travel. The section to be removed may be cut into short lengths or left in one piece and placed in stable positions. Slash shall be scattered outside the roadway and drainage ways. Rocks and other objects outside the usable width may remain, if drainage is not obstructed.

**820.04** Unless otherwise SHOWN ON THE DRAWINGS, brush, trees, and limbs shall be removed to provide a 12-foot traveled way. The traveled way shall be free of encroaching limbs to a height of (10) feet above the traveled way surface.

Brush and trees growing within the traveled way shall be cut parallel to and within (2) inches of the ground surface.

Slash shall be scattered outside the roadway and drainage ways. Concentrations of slash and debris greater than (18) inches above the ground will not be permitted.

**820.05** Minor sloughs; slides, and slumps that are less than 5 cubic yards per station, shall be removed or repaired. Minor slough and slide material, including soil, rock, and vegetative matter which encroaches onto the ditches, roadway or shoulder and which obstruct drainage shall be disposed of by sidecasting unless otherwise SHOWN ON THE DRAWINGS. Sidecasting into streams, lakes, or watercourses will not be permitted.

Minor slumps, and washouts, shall be filled with material generated from the adjacent area or as otherwise SHOWN ON THE DRAWINGS. Material shall be placed in layers not to exceed (8) Inches in depth and compacted by operating equipment over each layer.

**820.06** Traveled way maintenance shall include shaping the surface and shoulders to provide drainage and accommodate high clearance vehicles. Ruts and washouts that prevent normal road surface runoff and have a potential to further damage the road or adjacent resource shall be repaired. Ruts and washouts that impede vehicular travel by high clearance vehicles shall be repaired. Materials for filling the ruts shall be generated from the roadway or as otherwise SHOWN ON THE DRAWINGS. Material shall be placed in layers and compacted by operating equipment over the full width of each layer.

**MEASUREMENT**

**820.07** Native Surface Road Maintenance will be measured to the nearest one-tenth (0.1) mile as measured by a calibrated vehicle odometer along the road centerline.

**PAYMENT**

**820.08** The accepted quantities will be paid for at the contract unit price for each pay item shown in the SCHEDULE OF ITEMS.

Payment will be made under:

<b><u>Pay Item</u></b>	<b><u>Pay Unit</u></b>
820(01) Native Surface Road Maintenance.....	Mile

## **840 - LEVEL 1 ROAD MAINTENANCE**

### **DESCRIPTION**

**840.01** The maintenance work to be performed shall include work necessary to keep drainage functional, protect the road Investment and minimize damage to adjacent resources. These roads are normally closed to public motorized traffic.

### **WORK REQUIREMENTS**

**840.02** This work shall consist of cleaning culverts, drainage dips, and related items such as catch basins, drainage dips, outlet ditches, leadoff ditches, trash racks, drop inlets, head walls, aprons, and existing riprap.

Drainage structures and related items shall be cleared of all foreign material and all vegetative growth which interferes with the flow pattern. Grass shall be left in place provided drainage is not obstructed.

Culverts which have silted in to a depth of 1/4 of their opening height or more shall have their Inlet and outlets cleaned as well as (3) feet of the upper and lower ends of the inside cleaned out to expose the full diameter of the culvert.

Unless otherwise SHOWN ON THE DRAWINGS, catch basins shall be cleared of material to the bottom of the invert of the culvert and at least (18) inches horizontally towards the backslope or the width of the basin, whichever is greater.

The backslope shall be cleaned of loose material for a distance of (2) pipe diameters as measured from the bottom of the ditch up the backslope and for a width of (2) pipe diameters as measured horizontally on the backslope.

Inlet channel transition from the ditch line to the catch basin shall be cleaned a distance of 10 feet. Material removed, if suitable, may be blended into existing native road surfaces or shoulders. On aggregate surfaced roads, care must be taken to assure the material is not mixed into the existing aggregate. Unsuitable material shall be disposed of by sidecasting unless otherwise SHOWN ON THE DRAWINGS. Sidecasting into streams, lakes or watercourses will not be permitted.

Ditches shall be cleaned to conform to previous line, grade, and cross section. Cleaning is not required on ditches that provide drainage and are free of debris larger than (3) inches in diameter and (1) foot in length.

Drainage dip maintenance consists of cleaning existing dips on native surface roads.

Drainage dips shall be shaped to a depth and width to provide drainage and in reasonable conformity to the original lines, grades, and cross section, unless otherwise SHOWN ON THE DRAWINGS or designated on the ground. Leadoff ditches shall be cleaned for a distance of ten (10) feet from the drainage dip.

Material removed, if suitable, may be blended into existing native road surfaces or shoulders. On aggregate surfaced roads, care must be taken to assure the material is not mixed into the existing aggregate. Unsuitable material shall be disposed of by sidecasting unless otherwise SHOWN ON THE DRAWINGS. Sidecasting into streams, lakes, or watercourses will not be permitted.

**840.03** Logs and down trees, stumps, and loose rocks which obstruct the traveled way may be left in place if drainage is not obstructed.

**840.04** Vegetation, which interferes with proper drainage, shall be removed and scattered outside the roadway and drainage ways.

**840.05** Minor sloughs; slides, and slumps, which interfere with proper drainage, shall be removed and disposed of by sidecasting. Sidecasting into streams, lakes or watercourses will not be permitted.

**840.06** Traveled way maintenance shall be limited to preventing further Traveled Way erosion to the road or adjacent resources. Ruts and washouts that prevent normal road surface runoff and have a potential to further damage the road or adjacent resource shall be repaired.

Materials for filling the ruts shall be generated from the roadway or as otherwise SHOWN ON THE DRAWINGS. Material shall be placed in layers and compacted by operating equipment over the full width of each layer. Repair of ruts and washouts that impede vehicular travel by high clearance vehicles is not required. Brushing or logging out is not required, however, the traveled way may be cleared of obstructions to the extent required for accessing work.

## MEASUREMENT

**840.07** Measurement will be made to the nearest one-tenth (0.1) mile as determined through scaled map distance.

## PAYMENT

**840.08** The accepted quantities will be paid for at the contract unit price for each pay item shown in the SCHEDULE OF ITEMS.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
840(01) Level 1 Road Maintenance .....	Mile



## **850 - LEVEL 2 ROAD MAINTENANCE**

### **DESCRIPTION**

**850.01** The maintenance work to be performed shall include work necessary .to keep drainage functional, correction of safety problems, and maintenance of the road prism to provide passage of high clearance vehicles.

### **WORK REQUIREMENTS**

**850.02** This work shall consist of cleaning culverts, drainage dips, and related items such as catch basins, drainage dips, outlet ditches, leadoff ditches, trash racks, drop inlets, head walls, aprons, and existing riprap.

Drainage structures and related items shall be cleared of all foreign material and all vegetative growth, which interferes with the flow pattern. Grass shall be left in place provided drainage is not obstructed.

Culverts which have silted in to a depth of 1/4 of their opening height or more shall have their inlet and outlets cleaned as well as (3) feet of the upper and lower ends of the inside cleaned out to expose the full diameter of the culvert.

Unless otherwise SHOWN ON THE DRAWINGS, catch basins shall be cleared of material to the bottom of the Invert of the culvert and at least (18) inches horizontally towards the backslope or the width of the basin, whichever Is greater.

The backslope shall be cleaned of loose material for a distance of (2) pipe diameters as measured from the bottom of the ditch up the backslope and for a width of (2) pipe diameters as measured horizontally on the backslope.

Inlet channel transition from the ditch line to the catch basin shall be cleaned a distance of 10 feet. Material removed, if suitable, may be blended into existing native road surfaces or shoulders. On aggregate surfaced roads, care must be taken to assure the material is not mixed into the existing aggregate. Unsuitable material shall be disposed of by sidecasting unless otherwise SHOWN ON THE DRAWINGS. Sidecasting into streams, lakes, or watercourses will not be permitted.

Ditches shall be cleaned to conform to previous lines grade, and cross section. Cleaning is not required on ditches that provide drainage and are free of debris larger than (3) inches in diameter and (1) foot in length.

**850.03** Unless otherwise SHOWN ON THE DRAWINGS, logs and down trees, stumps, and loose rocks which extend more than (4) inches above the road surface shall be removed or repositioned to provide adequate clearance for vehicular travel. Logs and down trees should be cut to provide not less than 10 feet of opening for vehicular travel. The section to be removed may be cut into short lengths or left in one piece and placed in

a stable position. Slash shall be scattered outside the roadway and drainage ways. Rocks and other objects outside the usable width may remain, if drainage is not obstructed.

**850.04** Unless otherwise SHOWN ON THE DRAWINGS, brush, trees, and limbs shall be removed to provide a 12 foot traveled way. The traveled way shall be free of encroaching limbs to a height of (10) feet above the traveled way surface.

Brush and trees growing within the traveled way shall be cut parallel to and within (2) inches of the ground surface.

Slash shall be scattered outside the roadway and drainage ways. Concentrations of slash and debris greater than (18) inches above the ground will not be permitted.

**850.05** Minor sloughs; slides, and slumps that are less than 5 cubic yards per station, shall be removed or repaired. Minor slough and slide material, including soil, rock, and vegetative matter which encroaches onto the ditches, roadway or shoulder and which obstruct drainage shall be disposed of by sidecasting unless otherwise SHOWN ON THE DRAWINGS. Sidecasting Into streams, lakes, or watercourses will not be permitted.

Minor slumps, and washouts, shall be filled with material generated from the adjacent area or as otherwise SHOWN ON THE DRAWINGS. Material shall be placed in layers not to exceed (8) inches in depth and compacted by operating equipment over each layer.

**850.06** Traveled way maintenance shall include shaping the surface and shoulders to provide drainage and accommodate high clearance vehicles. Ruts and washouts that prevent normal road surface runoff and have a potential to further damage the road or adjacent resource shall be repaired. Ruts and washouts that impede vehicular travel by high clearance vehicles shall be repaired. Materials for filling the ruts shall be generated from the roadway or as otherwise SHOWN ON THE DRAWINGS. Material shall be placed in layers and compacted by operating equipment over the full width of each layer.

## **MEASUREMENT**

**850.07** Level 2 Road Maintenance will be measured to the nearest one-tenth (0.1) mile as measured by a calibrated vehicle odometer along the road centerline.

## **PAYMENT**

**850.08** The accepted quantities will be paid for at the contract unit price for each pay item shown In the SCHEDULE OF ITEMS.

Payment will be made under:

<b><u>Pay Item</u></b>	<b><u>Pay Unit</u></b>
850(01) Level 2 Road Maintenance .....	Mile

## **860 - LEVEL 3 ROAD MAINTENANCE**

### **DESCRIPTION**

**860.01** The maintenance work to be performed shall include work necessary to keep drainage functional and maintain the road prism to allow a prudent driver to safely negotiate the road in a passenger car.

### **WORK REQUIREMENTS**

**860.02** This work shall consist of cleaning culverts, drainage dips, and related items such as catch basins, drainage dips, outlet ditches, leadoff ditches, trash racks, drop inlets, head walls, aprons, and existing riprap.

Drainage structures and related items shall be cleared of all foreign material and all vegetative growth that interferes with the flow pattern. Grass shall be left in place provided drainage is not obstructed.

Culverts which have silted in to a depth of 1/4 of their opening height or more shall have their Inlet and outlets cleaned as well as (3) feet of the upper and lower ends of the Inside cleaned out to expose the full diameter of the culvert.

Unless otherwise SHOWN ON THE DRAWINGS, catch basins shall be cleared of material to the bottom of the invert of the culvert and at least (18) inches horizontally towards the backslope or the width of the basin, whichever is greater.

The backslope shall be cleaned of loose material for a distance of (2) pipe diameters as measured from the bottom of the ditch up the backslope and for a width of (2) pipe diameters as measured horizontally on the backslope.

Inlet channel transition from the ditch line to the catch basin shall be cleaned a distance of 10 feet. Material removed, if suitable, may be blended into existing native road surfaces or shoulders. On aggregate surfaced roads, care must be taken to assure the material is not mixed into the existing aggregate. Unsuitable material shall be disposed of by sidecasting unless otherwise SHOWN ON THE DRAWINGS. Sidecasting into streams, lakes or watercourses will not be permitted.

Ditches shall be cleaned to conform to previous line, grade, and cross section. Cleaning is not required on ditches that provide drainage and are free of debris larger than (3) inches in diameter and (1) foot in length.

Drainage dip maintenance consists of cleaning existing dips on native surface roads.

Drainage dips shall be shaped to a depth and width to provide drainage and in reasonable conformity to the original lines, grades, and cross section, unless otherwise SHOWN ON THE DRAWINGS or designated on the ground. Handwork may be necessary to obtain a

smooth surface and uniform cross section. Leadoff ditches shall be cleaned for a distance of ten (10) feet from the drainage dip. Material removed, if suitable, may be blended into existing native road surfaces or shoulders.

**860.03** Unless otherwise SHOWN ON THE DRAWINGS, logs and down trees, stumps, and loose rocks which extend more than (4) inches above the road surface shall be removed or repositioned to provide adequate clearance for vehicular travel. Logs and down trees should be cut to provide not less than 10 feet of opening for vehicular travel. The section to be removed may be cut into short lengths or left in one piece and placed in a stable position. Slash shall be scattered outside the roadway and drainage ways. Rocks and other objects outside the usable width may remain, if drainage is not obstructed.

**860.04** Brush, trees, and limbs shall be removed within the designated area as SHOWN ON THE DRAWINGS or designated on the ground.

Unless otherwise SHOWN ON THE DRAWINGS brush and trees less than four (4) inches in diameter within the designated area adjacent to the traveled way shall be cut to a maximum height of six (6) inches above the ground surface or obstructions such as rocks or stumps. Trees within the designated area in excess of four (4) inches in diameter when measured six (6) inches above the ground shall be limbed so that no limb extends into the designated area or over the roadbed. Tree limbs shall be trimmed as near flush with the trunk as practicable.

Brush and trees designated for removal within the designated traveled way shall be cut parallel and as close to the ground as practicable or to a maximum of one (1) inch above the elevation of the road surface. Vegetation shall be cut over the entire width of the traveled way or to the maximum width SHOWN ON THE DRAWINGS, whichever is less.

Signs, markers, and other road appurtenances are designated to be retained.

Work may be performed by hand or mechanically. Self-propelled equipment shall not be allowed on cut and fill slopes or in ditches unless otherwise SHOWN ON THE DRAWINGS.

Any damage to trunks of standing trees caused by Contractor's operation shall be treated with a commercial nursery sealer approved by the engineer.

Limbs, chunks, and debris in excess of one (1) foot in length or three (3) inches in diameter shall be scattered outside the roadway. Concentrations of slash and debris greater than eighteen (18) inches above the ground will not be permitted. Slash and debris shall not be placed in live streams.

**860.05** Minor sloughs; slides, and slumps that are less than 5 cubic yards per 100' station, shall be removed or repaired. Minor slough and slide material, including soil, rock, and vegetative matter which encroaches onto the ditches, roadway or shoulder and which

obstruct drainage shall be disposed of by sidecasting unless otherwise SHOWN ON THE DRAWINGS. Sidecasting into streams, lakes or watercourses will not be permitted.

Minor slumps, and washouts, shall be filled with material generated from the adjacent area or as otherwise SHOWN ON THE DRAWINGS. Material shall be placed in layers not to exceed (8) inches in depth and compacted by operating equipment over each layer.

**860.06** The roadbed shall be crowned or sloped to conform to the original prism. All berms shall be removed from the shoulders to the maximum extent possible and incorporated into the traveled way surface except those that are specifically designated to remain.

On roads open to public traffic, berms of materials caused by road maintenance operations shall be removed from the traveled way prior to the end of each day's work.

The blading shall proceed in an orderly fashion by successive passes with graders parallel to the road centerline, progressing from the lower side to the upper side of the roadbed and back across. In the process, shoulder material shall be cut and replaced to prevent vegetation encroachment.

On native surface roads, all ruts, holes, and washes shall be removed by scarifying or cutting to the bottom of such defects. Fines accumulated in blading roads or from drainage ditches shall not be wasted over fill shoulders.

On aggregate surface roads, all ruts, holes, and washes shall be removed by scarifying or cutting to the bottom of the aggregate surface. Scarification of subgrade material will not be permitted unless SHOWN ON THE DRAWINGS.

Rocks or other material remaining on the traveled way after the final blading that fail to pass a 4-inch sieve or are larger than the maximum size of imported surfacing shall be disposed of by sidecasting unless otherwise SHOWN ON THE DRAWINGS. Sidecasting Into streams, lakes or watercourses will not be permitted.

The cleaning of all drainage ditch, and leadoff ditches shall be Included with the blading procedures provided the work can be accomplished with a motor grader. Ditches shall be cleaned of any material that would obstruct the flow of water. The backslope shall not be undercut. Drainage dips shall be maintained to a depth and width to provide drainage; the lower end of drainage dips, including leadoff ditches, shall be shaped to drain water away from the roadway.

The roadbed immediately before and after cattleguards and bridges shall be bladed in such a manner as to effect a smooth transition. Material shall not be deposited inside cattleguards or onto bridges. Any material deposited on bridge decks, including any accumulated materials shall be removed from bridge decks. Deck drains shall be opened.

Rolling dips and leadoff ditches shall be cleaned and maintained to a depth and width to provide drainage. The lower end of the rolling dip, including leadoff ditches, shall be shaped to drain water away from the roadway.

Widened roadbed sections at cattleguards, curves, fills, and turnouts shall also be Included with the blading of the road surface.

Intersecting roads shall be bladed for a distance of 50 feet to assure proper transition of the two riding surfaces.

## **MEASUREMENT**

**860.07** Level 3 Road Maintenance will be measured to the nearest one-tenth (0.1) mile as measured by a calibrated vehicle odometer along the road centerline.

## **PAYMENT**

**860.08** The accepted quantities will be paid for at the contract unit price for each pay item shown in the SCHEDULE OF ITEMS.

Payment will be made under:

<b><u>Pay Item</u></b>	<b><u>Pay Unit</u></b>
860(01) Level 3 Road Maintenance .....	Mile